Sustainable Resource Management in Action: Oil and Gas

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British Columbia is the second largest producer of natural gas in Canada, with most of the activity taking place in the northeast corner of the province. In 2001, revenues to the province from natural gas and oil totalled $1.7 billion, exceeding those received from any other resource sector. Oil and gas development in the province is continuing to grow rapidly. Sustainability offers a means of balancing the benefits of this development with the potential negative impacts of continued growth.

The non-renewable nature of natural gas and other petroleum products presents particular challenges for the industry. The upstream (exploration, extraction and processing) and downstream (transmission and distribution) segments of the oil and gas sector have demonstrated a strong commitment to sustainable development.

Moving Towards Sustainable Resource Management

There are a number of initiatives being taken towards sustainability by oil and natural gas industry. Below are some activities that the sector in British Columbia is involved in.

Engaging local communities and First Nations

Whether it's through land use planning, exploration development, or environmental assessment, the industry works closely with First Nations whose traditional territories are in the vicinity of their activities, and with other adjacent communities. A variety of stakeholder and First Nations consultation processes are used to seek input, address concerns and find workable solutions that the community can live with. Some of these consultations are requirements of provincial and federal legislation but in many cases companies recognize the importance of engaging local communities in all aspects of their work, and go beyond the legal requirements. Many companies have developed economic opportunities for First Nations including training programs, employment and cooperative ventures.

Reducing the ecological footprint

The development of an oil and gas deposit can have a significant impact on the environment. The industry is employing new techniques and environmental management systems to reduce the impacts and the overall ecological footprint of a project. For instance, in the past, industry used to flare or vent unwanted waste gases, but recently there has been a concerted effort to reduce this practice. Many oil and natural gas operations use surface water and groundwater as part of their processes and over the past decade water recycling and use of non-potable water for processing have reduced the effect of oil and gas operations on local freshwater supplies. Other industry changes include the use of matting for access, waste gas re-injection and new technology and practices for seismic operations.

Matting is used in road construction as a sound environmental access technique, which also extends seasonal operations for industry. The mats reduce surface disturbances, allowing oil and gas construction to take place during summer months in traditional winter access areas.

Waste gas re-injection into deep subsurface reservoirs is a new development in the oil and gas industry. Through new technology, the waste gas is re-injected into a subsurface reservoir. This method is environmentally superior to traditional disposal operations.

Seismic technology and practices are continually improving. With the use of Global Positioning System (GPS) technology and under-canopy methods, heliportable seismic operations comprise of narrower line widths that minimize impacts to the environment. Mulchers are also now replacing cats within seismic operations. The result is natural re-generation and minimized disturbance to the ground and duff layer, as mulch remains on the seismic lines.

Seismic construction continues to focus on the use of existing lines, minimizing total disturbance and reducing both the environmental impact and ecological footprint on the land base.

Developing and promoting successful technology
The development of oil and gas reserves can often be very energy and materials intensive. The industry is continually working on innovative, new technologies to reduce emissions, waste and energy use, and protect valuable habitat. The result is enhanced environmental protection, as well as increased efficiency and overall financial performance. For example, directional drilling uses special equipment and procedures to access deposits that are underneath a sensitive habitat such as a lake or a bog. Directional drilling has proven to be an economically viable practice in northeastern British Columbia where it is used under protected areas and results in no surface disturbance inside the protected area.

Developing and sharing best management practices
Best management practices are often developed in collaboration with government, other companies, local communities and stakeholders. Concerns addressed may be surrounding sewage treatment, water usage, forestry practices for site clearing, and road building in sensitive habitats. Murphy Oil well site at Chicken Creek, north of Fort St. John, was an example of using environmentally sensitive construction practices. The company used machine-made snow for stream crossings and access roads. This allowed access to sites in low snow conditions with minimal disturbance.

Conducting research and development
Considerable funds are directed towards peer-reviewed research to make the industry more economically viable, environmentally friendly, and socially acceptable to local communities. The Canadian Association of Petroleum Producers (CAPP) plays a key role in supporting, reporting, and sharing of that information. In 1999, CAPP established a stewardship program that encourages producers to continually improve their environment, health and safety performance and to report their progress to stakeholders. CAPP produces annual stewardship progress reports that measure industry-wide progress.

The Science and Community Environmental Knowledge Fund, administered by the Oil and Gas Commission, collects and disperses $5 million over five years, to support research for practical ways of addressing environmental concerns relating to the oil and gas industry. The fund was established in 1998 as part of an agreement with CAPP and the Small Explorers and Producers

Association of Canada. As of March 2003, $2.1 million had been invested into 17 environmental research projects relating to the effects of oil and gas exploration and development.

Embracing product stewardship

The oil and natural gas sector looks at the entire management process to ensure that health, safety and environmental protection are integral to the design, manufacture, marketing, distribution, use, recycling and disposal of products and associated wastes. Hence a sustainable approach looks at all phases in the life of a product in order to achieve a practical and cost-effective solution. For example, the introduction and development of industry General Development Plans will link to existing Resource Management Plans, Emergency Response Plans and regulatory requirements to aid in an integrated management approach.

The industry and the province will continue to work together with other communities of interest to embrace sustainability principles in the oil and gas sector. This includes incorporating sustainability into the development of new potential resources such as coal bed methane or offshore oil exploration and development.

Sustainable Resource Management in Action is a series of topic papers developed to provide a better understanding of the province's approach to sustainable resource management. For more information and titles of other papers in the series, visit: www.gov.bc.ca/srm